

## CLAIMS

1. A pixel gain amplifier circuit comprising:  
an amplifier having an input and an output;  
an input capacitor, coupled to the input of the amplifier, onto which input capacitor  
5 charge from an input pixel is sampled during a first of first and second time phases; and  
a feedback capacitor, coupled between the input and the output of the amplifier, that  
receives charge from the input capacitor during the second time phase.
2. The pixel gain amplifier circuit as claimed in claim 1 wherein the input capacitor  
10 includes a variable capacitor.
3. The pixel gain amplifier circuit as claimed in claim 2 wherein the input capacitor  
comprises a capacitor array.
- 15 4. The pixel gain amplifier circuit of claims 2 or 3 wherein a capacitance of the input  
capacitor changes at a rate corresponding to a rate at which pixels are input into the circuit.
5. The pixel gain amplifier circuit as claimed in claim 1 wherein the feedback capacitor  
includes a variable capacitor.  
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6. The pixel gain amplifier circuit as claimed in claim 5 wherein the feedback capacitor  
comprises a capacitor array.
7. The pixel gain amplifier circuit of claims 5 or 6 wherein a capacitance of the feedback  
25 capacitor changes at a rate corresponding to a rate at which pixels are input into the circuit.
8. The pixel gain amplifier circuit as claimed in claim 1 further comprising an offset  
correction circuit.

9. A method of amplifying input pixels comprising the steps of:  
sampling an input pixel during a first of first and second time phases;  
amplifying the sampled input pixel during the second time phase; and  
controlling a gain of the amplification for each pixel.

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10. A pixel gain amplifier circuit comprising:  
an amplifier having an input, an output and a gain;  
means for varying the gain of the amplifier according to a rigid rate.

- 10 11. The pixel gain amplifier circuit according to claim 10 wherein the means for varying  
the gain of the amplifier includes a capacitor array.

12. The pixel gain amplifier circuit according to claim 10 wherein the rapid rate  
corresponds to a rate at which pixels are input into the circuit.